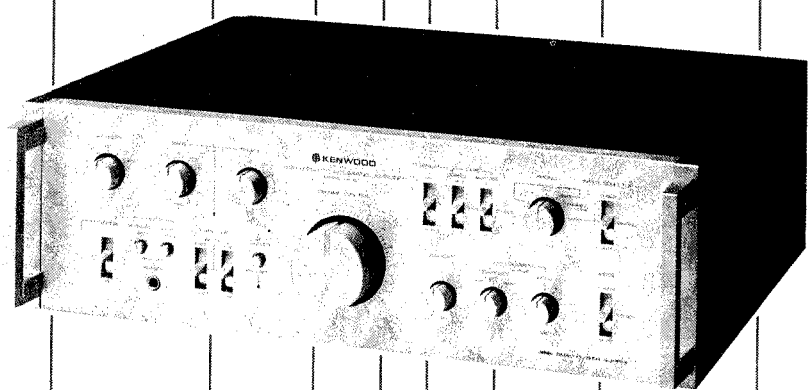
HIGH SPEED DC INTEGRATED AMPLIFIER

KA-907

INSTRUCTION MANUAL



KENWOOD

INTRODUCTION

The purpose of this manual is to acquaint you with the operating features of your new amplifier. You will notice that in every detail of planning, engineering, styling, operating convenience, and adaptability, we have sought to anticipate your needs and desires.

We suggest that you read this manual carefully. Knowing how to set up your amplifier to the best advantage will enhance your listening pleasure right from the start. You will also become aware of the ease with which you can adjust your amplifier to meet your special requirements.

FOR YOUR RECORDS

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your Kenwood dealer for information or service on this product.

Model KA-907 Serial number_____

AFTER UNPACKING

After unpacking, we recommend you inspect and examine the unit for any possible shipping damage. If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.

We recommend that you retain the original carton and packing materials to prevent any damage should you transport or ship your unit in the future.

INSTALLATION PRECAUTIONS

a) Avoid locations subject to direct sunlight.
b) Avoid high or low temperature extremes.
c) Keep the unit away from heat radiating sources.
d) Choose a location that is relatively free of vibration or excessive dust.
e) Make sure power is off before making any system connections.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

IMPORTANT!

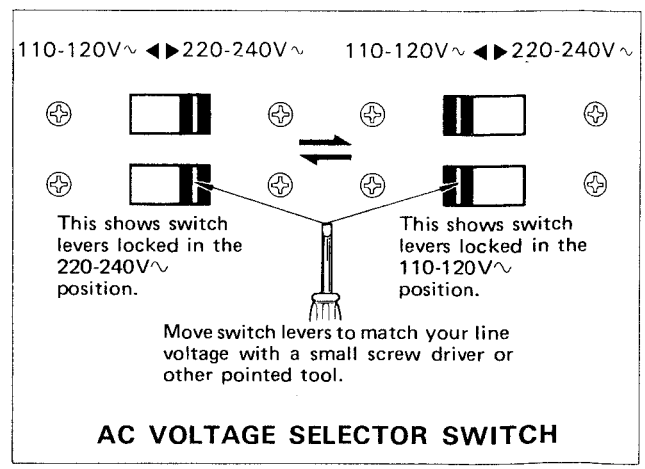
U.S.A AND CANADA
Units shipped to the U.S.A. and Canada are designed for operation on 120 volts AC only. These units are not equipped with an AC Voltage Selector switch and the discussion of such a switch that follows should be disregarded.

ALL OTHER COUNTRIES
Units shipped to countries other than the U.S.A. and Canada are equipped with an AC Voltage Selector switch on the bottom plate. Refer to the following paragraph for the proper setting of this switch.

AC VOLTAGE SELECTION

This unit operates on 110-120 volts or 220-240 volts AC.The AC Voltage Selector Switches on the bottom plate is set to the voltage that prevails in the area to which the unit is shipped. Before connecting the power cord to your AC outlet, make sure that the setting position of these switches match your line voltage. If not, it must be set to your voltage in accordance with the following direction.

Note:
Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC Voltage Selector Switch.


110-120V~ ◀▶220-240V~
110-120V~ ◀▶220-240V~
This shows switch levers locked in the 220-240V~ position.
This shows switch levers locked in the 110-120V~ position.
Move switch levers to match your line voltage with a small screw driver or other pointed tool.

AC VOLTAGE SELECTOR SWITCH

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FEATURES

1. THE MEANING OF "HIGH SPEED"

In the continuing search for perfect sound, recent research has focused on a form of distortion that occurs when sound transients force the amplifier to deliver very large changes in voltage in less than a millionth of a second. To counter this cause of distortion, Kenwood engineers have incorporated a new high speed amplifier design. The result is an amplifier that can respond to a change in output from a very low value to near maximum (the specification called rise time) in 0.8 microseconds. The voltage rate-of-change, called slew rate, is an unprecedented 230 volts per microsecond in both the positive and negative directions. These values of rise time and slew rate represent an improvement factor of 4 to 10 over conventional amplifiers. The result is preservation of tonal quality through the most complex of musical crescendos.

2. ULTIMATE DC AMPLIFIER "DC COUPLED"

Listening tests have shown that low-frequency phase shift can be detected as a change in tonal timbre. To prevent phase shift and preserve low-frequency tonal quality the amplifier employs DC coupling throughout the amplifier chain from the tuner, tape, and aux inputs to the speakers. Kenwood's leadership and experience with DC design techniques ensures perfect and stable operation right down to zero Hertz. The phono input employs one AC coupling device (a capacitor) but this does not affect the follow, since magnetic phono cartridges do not respond to static stylus pressure.

For those program sources that produce unwanted sound in the extreme low-frequency range, such as rumble, DC coupling can be switched out at the tuner, tape and aux inputs.

3. TWO INDEPENDENT POWER SUPPLIES

The KA-907 operates as two independent monophonic amplifiers, one for each stereo channel and each powered by its own individual power supply. This eliminates a form of distortion known as dynamic crosstalk when the power demands in one channel act to lower power to the other. By maintaining complete power independence, this notable form of distortion is avoided. In addition, extra solid-state regulators supply power to the preamps to that low-level signal processing is unaffected by the large power demands at the output stages.

4. HIGH PERFORMANCE PHONO EQUALIZER

A newly-designed DC equalizer employing dual-gate FETs achieves precision equalization to match RIAA record characteristics an moving-magnet cartridges. DC coupled internally, and using a single input coupling capacitor, the equalizer achieves an outstanding 90 dB signal-to-noise ratio while distortion is reduced to the vanishing point.

5. HIGH-PERFORMANCE MC HEAD AMPLIFIER WITH SIGNAL-TO-NOISE RATIO OF 70 DB (IHF A) AT 100 μV INPUT

The KA-907 has an extra-wide range DC head amplifier, all stages of which are made up of completely symmetrical push-pull circuits to ensure optimum performance for MC cartridges.

6. PHONO SELECTOR MATCHES CARTRIDGE NEEDS

At PHONO 1, MM and MC type cartridges can be used without reconnecting the pin jacks. For the MM type, any of the three input impedances — 33 kilohms, 47 kilohms, and 100 kilohms — can be selected so that various brands of commercial cartridges can be accommodated. Input impedance for MC cartridges is 100 ohms.

At PHONO 2, only MM type (47 kilohms) cartridges may be used.

The PHONO pin jacks are gold-plated to reduce contact resistance.

7. TONE CONTROL WITH TURNOVER SELECTOR

Turnover frequency selection can be made (150 Hz or 400 Hz for bass; 3 kHz or 6 kHz for treble) to subtly compensate for the acoustic characteristics of the program source or your listening room, and thus provide the desired tone. In addition, the tone defeat permits the tone circuit to be bypassed completely for flat response.

8. LOUDNESS CONTROL WITH 3-LEVEL AND 2-FREQUENCY POSITIONS

Fine adjustments can be made to compensate for sound field, aural sensitivity, and the speakers's low range.

9. SPECIAL TAPE-THROUGH SYSTEM

For maximum convenience the tape switching circuits have been set up to provide normal tape operations using a pair of tape decks. The unique tape-through feature permits tape dubbing from one deck to the other without tying up the entire system. Tuner, phono or other sources can drive the speakers while tape dubbing is in progress.

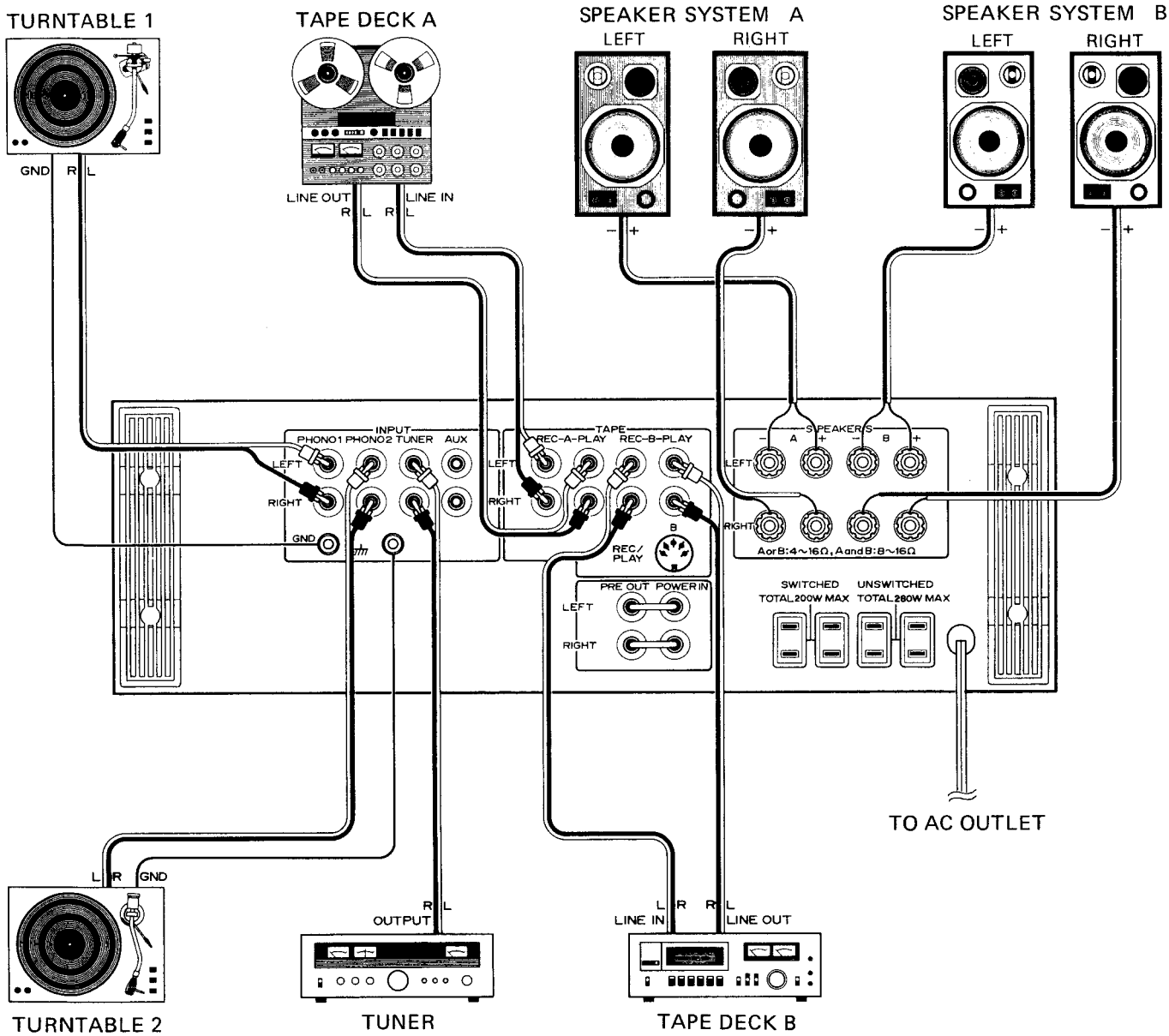
10. SPEAKER SWITCHING

The speaker switching circuit is wired for minimum resistance using with 3 relays. This maintains a high damping factor.

11. DUAL SPEAKER OPERATION

The KA-907 will drive one or two pairs of speakers. Each pair can be selected for individual use or they can be driven simultaneously.

SYSTEM CONNECTION DIAGRAM



AC OUTLETS

The AC outlets on the rear panel of the unit may be used to supply power to other components in the system, such as a turntable, tape deck, etc. Never connect equipment whose power consumption exceeds the maximum value shown at each outlet.

1. SWITCHED outlets: These outlets supply power only when the KA-907 is turned on. Its maximum total capacity is 200 watts.
2. UNSWITCHED outlets: These outlets provide power when the unit is plugged into an active AC wall outlet, regardless of the setting of the POWER switch. Its maximum total capacity is 280 watts.

Note:

Units shipped to European countries are not equipped with AC outlets.

SYSTEM CONNECTIONS

SPEAKERS

If only one set of speakers is to be connected, make connections to the terminals marked SPEAKERS A, as shown on page 4. Connect the speakers to the RIGHT and LEFT terminals in accordance with the location selected for each speaker. To ensure correct speaker phasing, observe polarity marks; connect terminals marked + on the amplifier to similarly-marked speaker terminals. Do the same for amplifier and speaker terminals marked with a minus sign. Reversal of speaker leads will result in loss of bass tones and poor stereo separation.

If a second set of speakers is to be used, make connections at the right set of terminals, marked B.

Note:

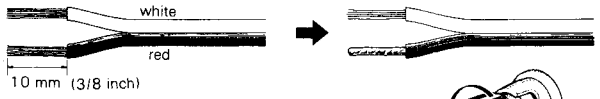
If a single pair of speakers is to be used, each speaker must be rated at 4 ohms or more.

When two pairs of speakers are connected (A + B) each speaker must be rated at 8 ohms or more.

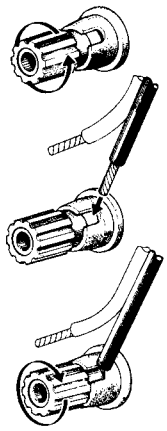
WARNING

Particular attention must be given to making good electrical contact at the amplifier-output and speaker terminals. Poor or loose connections can cause sparking or burning at the terminals because of the very high power that the amplifier can deliver. Follow these steps carefully.

1. Strip 10 mm (3/8 inch) of insulation from the ends of the speaker cable. Twist the bare strands of wire together and solder the ends to keep the strands from separating.



2. Back the caps of the SPEAKER terminals on the amplifier all the way out by turning them counterclockwise as far as they will go.
3. Insert one end of the red cable into the hole in the + terminal as shown at right.
4. Turn the cap clockwise and tighten securely to ensure a firm contact.



5. Connections at your speakers will vary depending upon the type of terminals used. Check the manufacturer's instructions and make sure that a good, tight, metal-to-metal contact is made.
6. Check all connections. Make sure all are tight, and that there are no loose strands of wire touching the wrong terminals, metal cabinet or trim.

TURNTABLES

Your stereo turntable has two audio cables that are terminated with phono plugs. PHONO 1 for an MM or MC cartridge and PHONO 2 for an MM cartridge. Plug the left channel plug into the "LEFT" and the right channel plug into the "RIGHT" PHONO 1 INPUT jacks as shown on page 4.

If an additional turntable is to be used, make similar connections at the PHONO 2 jacks.

If the turntable has a ground wire, connect it to the unit's GND terminal to avoid hum.

TUNERS

Use the TUNER terminals for connection to an FM stereo or AM-FM stereo tuner.

Connect the left channel of the tuner to the "LEFT" TUNER input jack and the right channel of the tuner to the "RIGHT" TUNER input jack.

AUX JACKS

INPUT AUX jacks are used to connect other high-level signal sources, such as tuners, extra tape decks (equipped with preamps), TV or VTR sound output mic preamps, etc.

TAPE DECKS

If only one tape deck is to be connected to the system it is recommended that it be connected to the jacks marked TAPE A.

Tape deck input and output cables are normally terminated with phono plugs.

Playback

Plug the left and right output cables of the tape deck into the "LEFT" and "RIGHT" TAPE A PLAY jacks.

Record

Plug the left and right input cables of the tape deck into the "LEFT" and "RIGHT" TAPE A REC jacks.

DIN Connector

If your tape deck is equipped with a DIN connector, connect it to the TAPE B REC/PLAY connector with the DIN connecting cord. The DIN connection makes both input and output connections with a single cord, and the signal must be controlled with the TAPE MONITOR switch on the front panel.

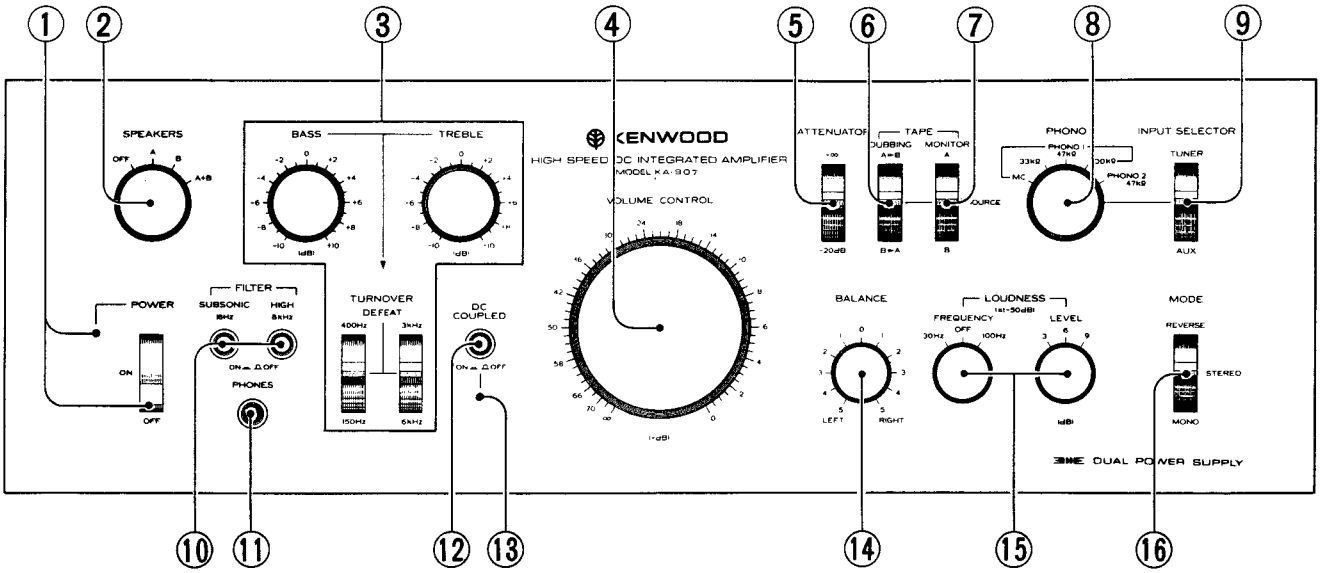
Note

If connections are made with a DIN connecting cord, the TAPE B PLAY and REC jacks should not be used.

Second Tape Deck

Plug the input and output cables from the second tape deck into the REC and PLAY jacks marked TAPE B.

CONTROLS, INDICATORS AND CONNECTORS



① POWER switch/POWER indicator (orange)

Set to ON, to turn power on. The power indicator (orange) will flash for about ten seconds. When the indicator stops flashing, and remains lit, the set is in normal operating condition. Set the switch to OFF to remove power. If the DC COUPLED switch is ON, the DC COUPLED indicator (green) ⑬ also flashes, and then lights simultaneously with the power switch.

② SPEAKERS switch

OFF — This position silences all speakers to permit private use of headphones.

A — Activates speakers connected to the SPEAKERS A terminals on the rear panel.

B — Activates speakers connected to the SPEAKERS B terminals on the rear panel.

A+B — Activates speakers connected to the SPEAKERS A and B terminals simultaneously.

③ TONE controls

The BASS and TREBLE controls adjust bass and treble response. Each knob controls both left and right channels equally.

Turning the knobs clockwise increases bass and treble response and counterclockwise decreases bass and treble response.

You can select the bass and treble TURNOVER frequencies (150 Hz or 400 Hz for bass control, 3 kHz or 6 kHz for treble control) with the TURNOVER switches. The DEFEAT position provides completely flat frequency response with the tone control circuit deactivated.

Switch positions and functions are as follows:

150 Hz: ±7.5 dB at 75 Hz
400 Hz: ±7.5 dB at 150 Hz
3 kHz: ±7.5 dB at 10 kHz
6 kHz: ±7.5 dB at 20 kHz

④ VOLUME control

This control adjust left- and right-channel volume simultaneously. Set it for the desired listening level. The scale is provided with dB graduations to indicate attenuation when maximum output level corresponds to 0 dB.

⑤ ATTENUATOR switch

−∞ — Turns OFF all sound. The sound volume can be temporarily reduced to zero when changing the cartridge, record, or tape.

0 — Keep the control at this position for normal listening. Sounds will not be attenuated at this position.

−20 dB — When temporarily lowering the sound volume, for example, when answering the telephone, set the control to it lowers volume to 1/10 of the level set by the VOLUME control.

⑥ TAPE DUBBING switch

Facilitates the making of copies (dubs) of taped programs. Two tape decks are required, one to playback the tape, the other to record the copy.

A ▷ B — To dub from a tape deck connected to the TAPE A jacks into a tape deck connected to the TAPE B jacks.

B ▷ A — To dub from a tape deck connected to the TAPE B jacks into a tape deck connected to the TAPE A jacks.

⑦ TAPE MONITOR switch

SOURCE — The signal applied to the record terminals of a tape deck is heard.

CONTROLS, INDICATORS AND CONNECTORS

A — To monitor a recording in progress or to play back a tape from a tape deck connected to the TAPE A jacks.

B — To monitor a recording in progress or to play back a tape from a tape deck connected to the TAPE B jacks.

⑧ PHONO selector

PHONO 1 — Selects the source connected to the PHONO 1 input jacks on the rear panel. At these positions, MM and MC type cartridges can be used without reconnecting the input cables. Any of the input impedances of 33, 47 and 100 kilohms can be selected as required when using MM cartridges. Select the impedance specified in the instruction manual for the turntable or cartridge. The input impedance for MC cartridges is 100 ohms.

PHONO 2 — Selects the turntable (MM type 47 kilohm cartridges only) connected to the PHONO 2 input jacks.

⑨ INPUT SELECTOR switch

This switch selects the desired program source.

TUNER — Selects the tuner connected to the TUNER input jacks.

PHONO — Selects the turntable connected to the PHONO 1 or PHONO 2 input jacks.

AUX — Selects the program source connected to the AUX input jacks.

⑩ FILTER switches

SUBSONIC — Press the switch in to attenuate signals below 18 Hz (6 dB per octave). Although such signals are inaudible, they can cause intermodulation distortion products in the audible range. It is recommended that this switch be depressed (latched in) at all times, even if no turntable rumble is apparent. Press the switch again to release the latch. It will pop out removing the subsonic filter.

HIGH — Pressing this switch in (latched) reduces signals above 8 kHz at the rate of 12 dB per octave. Press this switch in to lessen the effects of tape hiss, record scratch, etc. Press to unlatch (switch out) in all other cases.

⑪ PHONES jack

Plug stereo headphones into this jack for private listening.

⑫ DC COUPLED switch

When this switch is set to OFF a single coupling capacitor is inserted at the preamp input circuits. This breaks the DC coupling path between the signal source and the speaker, and should be used if the signal sources connected to the TUNER, TAPE, or AUX jacks introduce unwanted DC leakage. The OFF setting may also be used to eliminate very low-frequency audio, which while inaudible, may cause intermodulation distortion.

A single capacitor is always in the PHONO input circuits. Thus, two capacitors are in the signal path when phono operation is selected and the DC COUPLED switch is OFF.

When the switch is set ON the input capacitors to the preamps are removed and true DC coupling exists between the TUNER, TAPE and AUX jacks and the speakers (the single coupling capacitor remains at the PHONO inputs). This provides a flat response, down to DC (zero Hz) for the ultimate in amplitude and phase response at the extreme low range of human hearing. Overall phono response is not affected by the single coupling capacitors at the phono inputs.

⑬ DC COUPLED indicator (Green)

If the DC COUPLED switch is on when power is applied, the green indicator will flash for about ten seconds while the circuits stabilize. At the end of this period the indicator will glow steadily, indicating full stabilization and perfect balance.

If the indicator flashes continuously, an imbalance exists due to DC leakage from the signal source or a possible malfunction. Turn off power, and consult the table on page 13 for appropriate corrective measures.

⑭ BALANCE control

This control permits balancing of left and right channels when an imbalance exists from the sound source, or to correct acoustic imbalance due to room conditions. Turn it to the left from the zero position to boost the left channel; turn it to the right of zero to raise the level of the right channel.

⑮ LOUDNESS control

The LOUDNESS control compensates for a natural loss of human aural sensitivity in the bass range at low volume levels. In the KA-907, additional correction is available to compensate for small speakers or the effects of room acoustics. Low-frequency correction may be applied at 30 or 100 Hz and boosts of 3, 6 or 9 dB selected. The boost values apply at a VOLUME setting of −50 dB; the larger values signify greater intensification.

⑯ MODE switch

Switch positions and functions are as follows:

STEREO — This provides stereophonic reproduction of any stereo program source. The left channel is heard from the left speaker, and the right channel is heard from the right speaker.

REVERSE — Stereophonic reproduction with reversed channels: left channel to right speaker, right channel to left speaker.

MONO — Monophonic reproduction. The left and right channels are mixed together and heard from both speakers.

OPERATING INSTRUCTIONS

INITIAL SETUP

Set controls and switches as follows:
VOLUME ——→ Fully counterclockwise (∞)
TURNOVER ——→ DEFEAT
BASS, TREBLE, BALANCE ——→ Center (zero)
LOUDNESS, DC COUPLED ——→ OFF
ATTENUATOR ——→ 0
MODE ——→ STEREO
TAPE DUBBING, TAPE MONITOR ——→ SOURCE
Unplug headphones from the PHONES jack.
Turn POWER ON.

TUNER

1 . Set the INPUT SELECTOR switch to TUNER.
2. Operate the tuner as usual.
3. Turn up VOLUME to the desired listening level.
4. Adjust tone controls to suit your taste.

TURNTABLES

1 . Set the INPUT SELECTOR switch to PHONO.
2. Set the PHONO selector to PHONO 1 or PHONO 2 to select audio from turntables connected to the PHONO 1 and/or PHONO 2 jacks respectively.
3. Operate the selected turntable.
4. Adjust volume and tone controls for your preference.

AUX

1. Set the INPUT SELECTOR switch to AUX.
2. Operate the component or accessory connected to the AUX jacks.
3. Adjust volume and tone for your preference.

TAPE DECKS

Tape Playback

1. Set the TAPE MONITOR switch to A or B to select output from tape decks connected to the TAPE A or B jacks (The setting of the INPUT SELECTOR switch affects speaker output only when the TAPE switches are set to SOURCE).
2. Operate the tape deck.
3. Adjust volume and tone for your preference.

Monitoring

If your tape deck is equipped with three heads, you can compare the sound quality of the recording in progress with that of the source material by switching the TAPE MONITOR switch between SOURCE and A (or B) while the recording is being made.

Recording (one tape deck)

1. Set the INPUT SELECTOR switch to the desired program source. Set the TAPE DUBBING switch to SOURCE. To monitor the recording, set the TAPE MONITOR switch to A or B depending on the set of jacks to which your tape deck is connected.
2. Set up your tape deck for recording and set recording levels with the controls on your tape deck. The volume control and tone controls on the amplifier do not affect the signal applied to the tape deck for recording purposes.
3. Adjust listening level and tone at the amplifier for your preference in monitoring the signal; these settings will not affect the recording.

Recording (two tape decks)

1. Set the INPUT SELECTOR switch to the desired program source.
2. Set the TAPE DUBBING switch to SOURCE.
3. Recordings can now be made on both tape decks simultaneously. Either recording can be monitored by setting the TAPE MONITOR switch to A or B.
4. Recording levels should be set using the controls on the individual tape decks.

OPERATING INSTRUCTIONS

Tape-to-Tape Dubbing

Tape recordings may be duplicated easily using one tape deck to play the prerecorded tape and another tape deck to record the copy. Set the TAPE DUBBING switch as follows:

A ▷ B — To record a copy on tape deck B from a tape played on tape deck A.

B ▷ A — To record a copy on tape deck A from a tape played on tape deck B.

Note:

The setting of the INPUT SELECTOR switch does not affect this operation. Adjust record levels on the deck that is making the copy using that decks operating controls. Start both decks (play and record) simultaneously.

THE THROUGH CIRCUIT

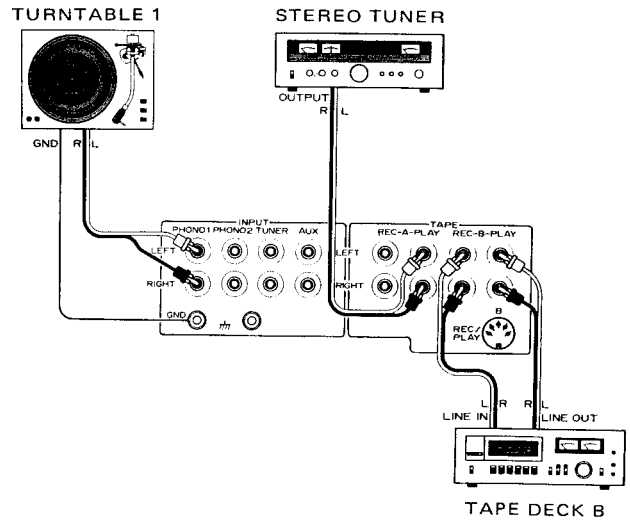
This unit permits listening to other program sources, such as FM broadcasts or records while tape dubbing. Other combinations can be set up as follows:

- **FM broadcasts can be tape recorded while simultaneously listening to records as follows:**

1. Connect the tuner to the "PLAY" jacks of the TAPE A group on the rear panel of this unit and the tape deck to the TAPE B jacks.
2. Connect the turntable to PHONO 1 jacks on the rear panel and set the PHONO selector switch to PHONO 1.
3. FM broadcasts can be recorded when the TAPE DUBBING switch is then set to A ▷ B and the tape deck is operated in recording mode.
4. Phono sound is reproduced when the TAPE MONITOR switch is set to SOURCE.
5. FM broadcasts are reproduced when the TAPE MONITOR switch is set to A. The recorded sound of FM broadcasts are reproduced and can be monitored when the TAPE MONITOR switch is set to B.

- **Phono sources can be tape recorded while simultaneously listening to FM broadcasts as follows:**

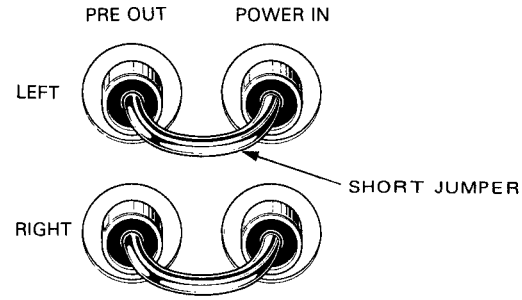
1. Connect the tuner to the "PLAY" jacks of the TAPE A group on the rear panel of this unit and the tape deck to the TAPE B jacks.
2. Connect the turntable to PHONO 1 jacks on the rear panel and set the PHONO selector switch to PHONO 1.
3. Set the TAPE MONITOR switch to A and tune in FM broadcasts.
4. Set the TAPE DUBBING switch to SOURCE and the tape deck to recording mode. The sound from the disc record can then be recorded.
5. The FM broadcasts are reproduced when the TAPE MONITOR switch is then set to A. When it is set to SOURCE, the sound of the disc record will be reproduced. When it is set to B, the tape recorded sound of the disc record can be monitored.



OPERATING INSTRUCTIONS

PRE OUTPUT/POWER IN JACKS

Independent Preamplifier and Power Amplifier Sections
The preamplifier and power sections are tied together by short jumpers at the PRE OUT/POWER IN jacks. These major sections may be separated for independent operation by removing the short jumpers. This permits the KA-907 preamps to drive another set of power amplifiers for test or comparison purposes. In addition, an external preamp may be connected to the POWER IN jacks to drive the power amplifier section of the KA-907. Turn off power when removing or replacing the jumpers.



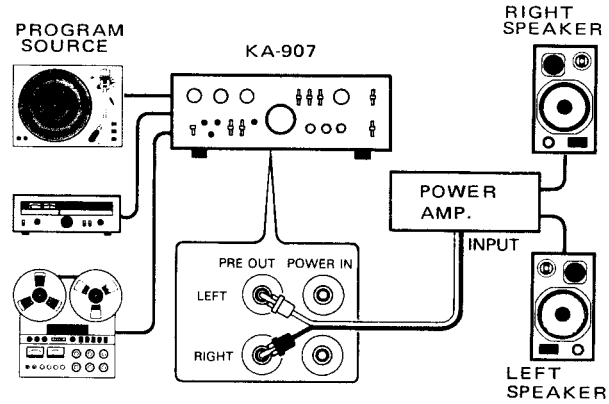
When not using these jacks, be sure to keep the short jumpers in place.

A Multi-amplifier system

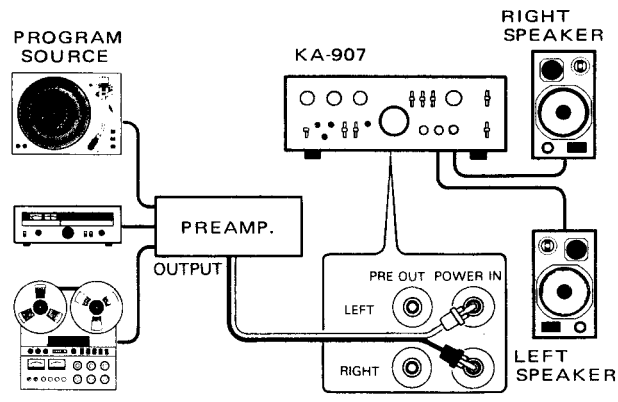
By adding an electronic crossover network and one or two additional power amplifier, a high-grade multi-amplifier system can be built in the following manner.

1. Connect the PRE OUT jacks to the input jacks of the crossover network (adaptor).
2. Connect the POWER IN jacks to the low-range output jacks of the crossover network.
3. Connect the high range output jacks of the crossover network to the input jacks of a separate power amplifier for the high-frequency range.
4. Connect the speakers for the lower frequencies to the amplifier, and those for the higher frequencies to the separate amplifiers.

Note:
For further details on connections, etc, see the instruction manual supplied with the adaptor.



Independent Preamplifier System

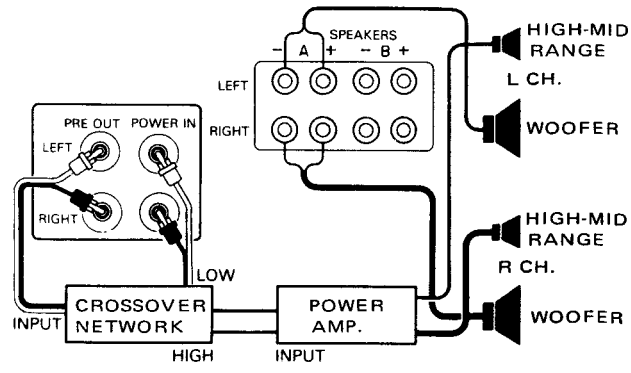


Independent Power Amplifier System

Precautions when using the POWER IN jacks

- The power amplifier in the KA-907 is fully DC coupled. If a DC voltage is applied at the POWER IN jacks it will be amplified and appear as a large direct current into your speakers (the speaker cones will show a static displacement). To protect your speakers, make sure that there is no steady-state DC voltage applied from the equipment connected to the POWER IN jacks.
- If a DC voltage in excess of 200 mV is applied to the POWER IN jacks the protection circuit will activate to prevent speaker or circuit damage and the power indicator will flash to indicate a fault.

Note:
There are no level controls in the power amplifier section. Make sure power is off before making any connections to the POWER IN jacks.



A Multi-amplifier System

SAFETY PRECAUTIONS

CLEANING

Do not use volatile solvents such as alcohol, paint thinner, gasoline, benzine, etc. to clean the cabinet. Use a silicon cloth or a clean dry cloth.

VENTILATION HOLES

The case top is slotted to allow ventilation. Never block these holes with ornamental cloths, books or other objects. Make sure that metal objects such as hairpins, or needles do not enter the unit through the ventilation holes. The result could be a serious malfunction or a possible shock hazard. Make sure that children do not insert foreign objects into the ventilation holes.

MODIFICATIONS AND SERVICE

Each unit is shipped after it has been carefully adjusted and tested to provide optimum performance. The unit must not be modified internally. Unauthorized modifications will void the terms of the warranty. High voltages are used in some of the internal circuits. Therefore, do not remove the cabinet or touch internal parts. Refer all service to qualified service personnel.

POWER CORD

Always insert or remove the power plug from the AC outlet by grasping the plug body. Never pull or stretch the cord. Take care that the cord is not subject to traffic or bent sharply around furniture. Keep heavy objects off the cord; never route it under rugs, and avoid the use of extra extension cords. Attention to these precautions will avoid fire or shock hazards.

PROTECTION OF SPEAKER SYSTEM

Your amplifier is capable of supplying very high power to yopur speakers. To prevent speaker damage due to accidental surges, such as may be caused by inadvertently dropping the stylus onto a record, make it a habit to reduce volume before changing records, switching between program sources or turning power ON.

Check the power-handling ability of your speakers and make sure that the power supplied is within their limits. Excessive power can permanently damage your speakers.

ACOUSTIC FEEDBACK

Occasionally a disturbing howling sound caused by acoustic feedback, may be heard. This is generally caused by the relative positions of the turntable and speaker enclosures. The sound pressure radiated from the speaker surrounds and vibrates the turntable.

This vibration is picked up by the cartridge, sent to the unit as an electrical signal, and returned to the speaker. This again causes the speakers to radiate vibration which induces sympathetic vibrations in the turntable and cartridge. Sympathetic vibrations are reinforced with each repeating cycle and result in an undesirable sound called oscillation or "howling". To prevent it, keep your turntable away from your speakers. Also mounting your turntable on shock-absorbing pads may help.

HEXAGONAL KEY

Be sure to keep the hexagonal wrench since it is necessary for repair by your service technician.

IN CASE OF DIFFICULTY

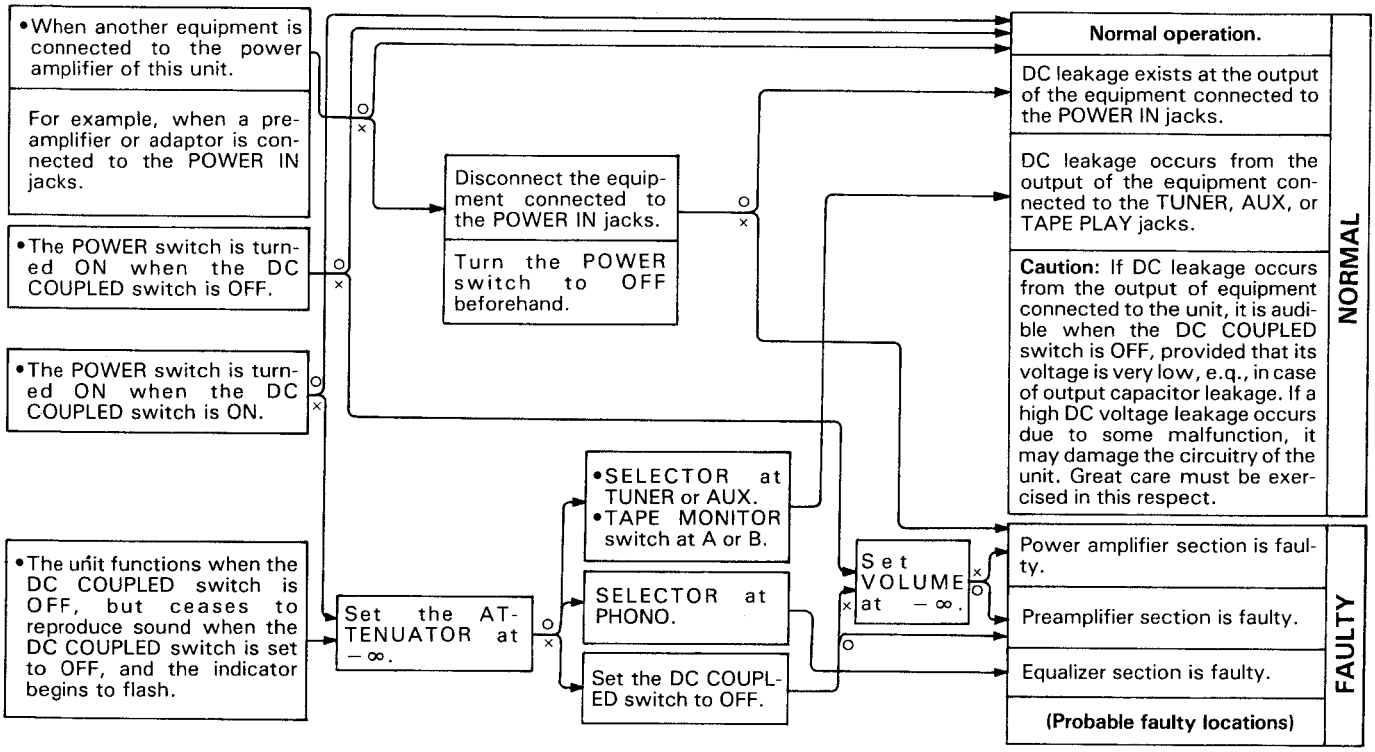
If your unit should not perform as expected, consult the table below to see if the problem can be corrected before seeking help from your Kenwood dealer or service technician.

AM, FM, PHONO or Tape playback	CAUSE	REMEDY
Pilot lamp out, no sound, power on.	a) Power cord not plugged in. b) Poor connection at wall outlet. Power outlet inactive. c) Fuse blown.	a) Check plug contact. b) Check outlet using a lamp or other appliance (outlet may be controlled by a wall switch). c) Replace fuse. If it blows again, trouble must be corrected.
Pilot lamp lights but no sound from left or right.	a) Speaker cords disconnected. b) Speakers switched off. c) Volume control fully CCW. d) TAPE MONITOR or DUBBING switches set to A or B.	a) Check speaker connections. b) Check speaker switch. c) Adjust volume. d) Set to SOURCE except when tape decks are in use.
Sound from left or right, but not both.	a) Poor speaker connections. b) Defective speaker. c) BALANCE set to one extreme or the others.	a) Check connections at both ends of speaker cord. b) Reverse speakers, if problem stays with speaker have speaker checked. c) Check setting of BALANCE control.
Noise when POWER is switched on or volume is adjusted immediately after. Phono level differs from FM or AM level.	a) Insufficient warmup. b) Low or high output from phono cartridge.	a) Allow 10 seconds for warmup before adjusting volume. b) May be normal; adjust volume accordingly.
PHONO playback only	**CAUSE**	**REMEDY**
No sound from both or one speaker. Loud hum drowns out sound.	a) Turntable output disconnected. b) Poor ground connection at phono cable connections.	a) Check phono cables. b) Check phono plugs, particularly outershell connections.
Low background hum.	Hum Picked up in turntable or turntable cables.	Keep cables away from power cords. Twist left and right cables together. Reverse AC plug of turntable. Connect ground wire between turntable and GND connector.
Background buzz.	TV signal picked up by phono cable (especially near transmitter).	Route phono cables to minimize buzz.
Howling noise at maximum volume settings.	Acoustic pickup from speaker.	Increase distance between speaker and turntable. Choose speaker locations carefully. Check turntable suspension.

IN CASE OF DIFFICULTY

POWER INDICATOR AND DC COUPLED INDICATOR

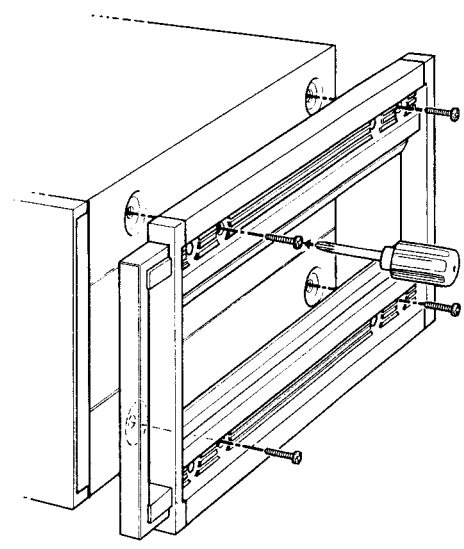
The POWER indicator and the DC COUPLED indicator flash in case of some malfunction of the unit. In such a case, locate the cause of the trouble, and take corrective measures by referring to the following chart.


•When another equipment is connected to the power amplifier of this unit.
For example, when a pre-amplifier or adaptor is connected to the POWER IN jacks.
•The POWER switch is turned ON when the DC COUPLED switch is OFF.
•The POWER switch is turned ON when the DC COUPLED switch is ON.
•The unit functions when the DC COUPLED switch is OFF, but ceases to reproduce sound when the DC COUPLED switch is set to OFF, and the indicator begins to flash.
Disconnect the equipment connected to the POWER IN jacks.
Turn the POWER switch to OFF beforehand.
Set the ATTENUATOR at −∞.
•SELECTOR at TUNER or AUX.
•TAPE MONITOR switch at A or B.
SELECTOR at PHONO.
Set the DC COUPLED switch to OFF.
Set VOLUME at −∞.
Normal operation.
DC leakage exists at the output of the equipment connected to the POWER IN jacks.
DC leakage occurs from the output of the equipment connected to the TUNER, AUX, or TAPE PLAY jacks.
Caution: If DC leakage occurs from the output of equipment connected to the unit, it is audible when the DC COUPLED switch is OFF, provided that its voltage is very low, e.q., in case of output capacitor leakage. If a high DC voltage leakage occurs due to some malfunction, it may damage the circuitry of the unit. Great care must be exercised in this respect.
NORMAL
Power amplifier section is faulty.
Preamplifier section is faulty.
Equalizer section is faulty.
(Probable faulty locations)
FAULTY

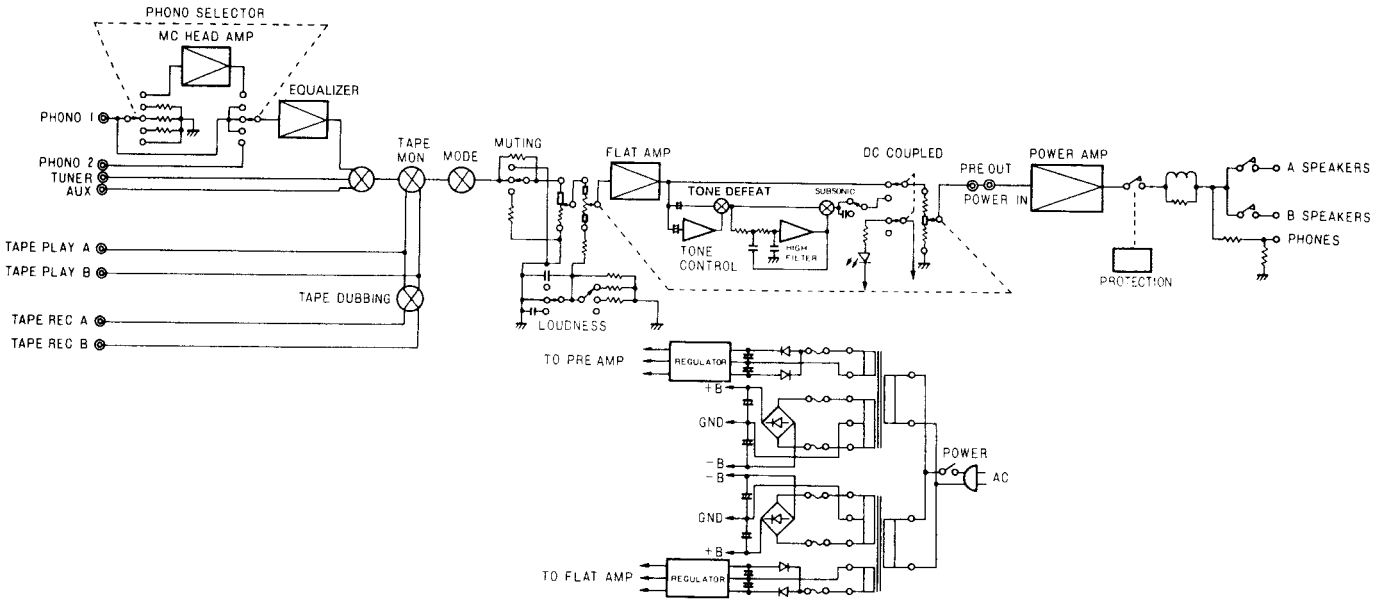
○ : The indicator stops flashing after about 10 seconds, the speaker relays operate, and sound normal.
× : The indicator keeps flashing after 10 seconds and no sound.

HANDLE INSTALLATION

The unit is provided with a pair of handles. When mounting the handles, take the four screws off each of both sides of the unit, and put them aside. Then, mount the handles to the unit with the supplied longer ornamental screws driven with a Phillips screwdriver.



BLOCK DIAGRAM



TECHNICAL DESCRIPTION

DC Power Amplifier

In many ways the direct current (DC) amplifier is the ideal amplifier for audio use.

Kenwood audio engineers have taken up the challenge of producing this ideal amplifier. The result has been success in producing a power amplifier which makes this concept a reality.

Characteristics of DC Amplifier

1. They make reproduction of low frequencies down to subsonic and DC levels possible.
   The result is to give a greater sense of power in the audio reproduction which greatly increases enjoyment of music and reproduces the low-frequency high-energy sounds of a live performance as only a DC amplifier can.
2. There is zero phase difference between input and output.
   Because there are no capacitors in the signal path to cause phase rotation, phase distortion is absent.
3. Output waveform is a faithful duplication of the input waveform. Although this would seem to be a natural prerequisite for a hi-fi amplifier, it is a fact that only a DC amplifier makes this duplication possible.

The performance of a DC amplifier depends upon the stability of each individual circuit within it. In the input stage, special dual FETs are used, intended for the most demanding electronic computer applications (in packs of perfectly balanced pairs). This is followed by a three-stage differential amplifier operating in Class A, in which the open loop gain is high, and in which a predetermined degree of negative feedback is applied. The pre-driver load circuit includes a power transistor for which bias is stabilized by a constant current supply. This circuit configuration gives excellent stability and extremely wide frequency response.

SPECIFICATIONS

POWER OUTPUT

150 watts* per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.01% total harmonic distortion.

Both Channels Driven	150+150 watts 8 ohms at 1,000 Hz
	180+180 watts 4 ohms at 1,000 Hz
Total Harmonic Distortion (20 Hz to 20,000 Hz)	
AUX input to SPEAKER output	0.01% at rated power into 8 ohms
	0.006% at 1/2 rated power into 8 ohms
PHONO input to SPEAKER output	0.01% at rated power with VOLUME −20 dB
Intermodulation Distortion (60 Hz : 7 kHz=4 : 1)	0.0045% at rated power into 8 ohms
Damping Factor	100, DC~20,000 Hz into 8 ohms
Transient Response	
Rise Time	0.8 μs
Slew Rate	±230 V/μs
Power Bandwidth	5 Hz to 100 kHz at 0.03% T.H.D.
Frequency Response (DC COUPLED at ON)	DC to 400 kHz, +0 dB, −3 dB
(DC COUPLED at OFF)	1 Hz to 400 kHz, +0 dB, −3 dB
Speaker Impedance	Accept 4 ohms to 16 ohms
Power IN Sensitivity/Impedance	1 V, 50 kohms
Input Sensitivity/Impedance	
Phono 1 (MM)	2.5 mV/33 kohms, 47 kohms and 100 kohms
Phono 2 (MM)	2.5 mV/47 kohms
Phono 1 (MC)	0.1 mV/100 ohms
Tuner, AUX, Tape A, B	150 mV/50 kohms
Signal to Noise Ratio (IHF, A)	
Phono 1 & 2 (MM)	90 dB for 2.5 mV input
	96 dB for 5.0 mV input
	102 dB for 10 mV input
Phono 1 (MC)	70 dB for 0.1 mV input
	76 dB for 0.2 mV input
Tuner AUX, Tape A, B	105 dB for 150 mV input
Maximum Input Level for Phono 1 & 2 (MM)	230 mV (RMS), T.H.D. 0.01% at 1,000 Hz
for Phono 1 (MC)	9 mV (RMS), T.H.D. 0.01% at 1,000 Hz
Output Level/Impedance	
Tape REC (Pin)	150 mV/180 ohms
(DIN)	30 mV/80 kohms
PRE OUT (Maximum)	9 V/750 ohms
Frequency Response for Phono	RIAA standard curve ±0.2 dB (20 Hz to 20,000 Hz)
Tone Control	
Bass	±7.5 dB, Crossover Freq. 150 Hz and 400 Hz
Treble	±7.5 dB, Crossover Freq. 3 kHz and 6 kHz
Loudness Control (at −50 dB VOLUME Level)	+3 dB, +6 dB, +9 dB at 30 Hz or at 100 Hz
Subsonic Filter	18 Hz, 6 dB/oct
High Filter	8 kHz, 12 dB/oct

GENERAL

Power Consumption	1,000 watts at full power
A.C. Outlet	Switched 2, Unswitched 2
Dimensions	W 460 mm (18-1/8")
	H 161 mm (6-11/32")
	D 463 mm (18-7/32")
Net Weight (less handles)	25.8 kg (56.9 lbs)

* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.

Note: Kenwood follows a policy of continuous advancements in developments. For this reason specifications may be changed without notice.